An Educational Intervention to Increase Dual Nicotine Replacement Prescribing within a Large Integrated Health System

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BACKGROUND

➤ Nearly 70% of tobacco smokers want to quit but struggle to do so. Patients prescribed combination nicotine replacement therapy (cNRT) are 25% more likely to quit smoking compared to NRT monotherapy (systematic review, n=11,356; RR 1.25, 95% CI 1.15 to 1.36).

➤ In 2021, primary care physicians (PCPs) at Kaiser Permanente San Diego (KPSD) prescribed cNRT <10% of time when nicotine pharmacotherapy prescribed.

➤ An educational campaign was designed to provide PCPs with evidence supporting the safety, efficacy, and tolerability of cNRT for smoking cessation and changes in prescribing patterns were measured 6 months post-intervention.

METHODS

➤ Pre/Post Study in 2022-2023. Intervention was a 30-minute virtual training for all PCPs at KPSD in Sept 2022 and a 6-week follow-up communication. Approval for study obtained from Kaiser Permanente Southern California IRB.

➤ Nicotine prescriptions 6 months pre-and post-intervention obtained from the integrated pharmacy database. PCPs (N=267) continuously employed included in the analysis.

➤ cNRT defined as same-day order of nicotine patch PLUS gum and/or lozenge.

➤ Primary endpoint: # patients prescribed cNRT *at least once* during observation period. Logistic regression model assessed association between the rates of patients receiving cNRT over the time and chi-square testing used to test for significance.

➤ Secondary endpoint: # physicians who prescribed cNRT at least once. McNemar's test for paired data used to test for a change in the proportion of physicians prescribing cNRT.

➤ Varenicline prescriptions pre- and post-intervention were used as a balancing measure.

Figure 1: Pictograph demonstrating the rational for Choosing cNRT over NRT monotherapy

Why Use Combination Nicotine Replacement Therapy?

Table 1: Demographics of Patients Prescribed NRT by Adult PCPs in the 6 months Before and After Educational Intervention in September 2022.

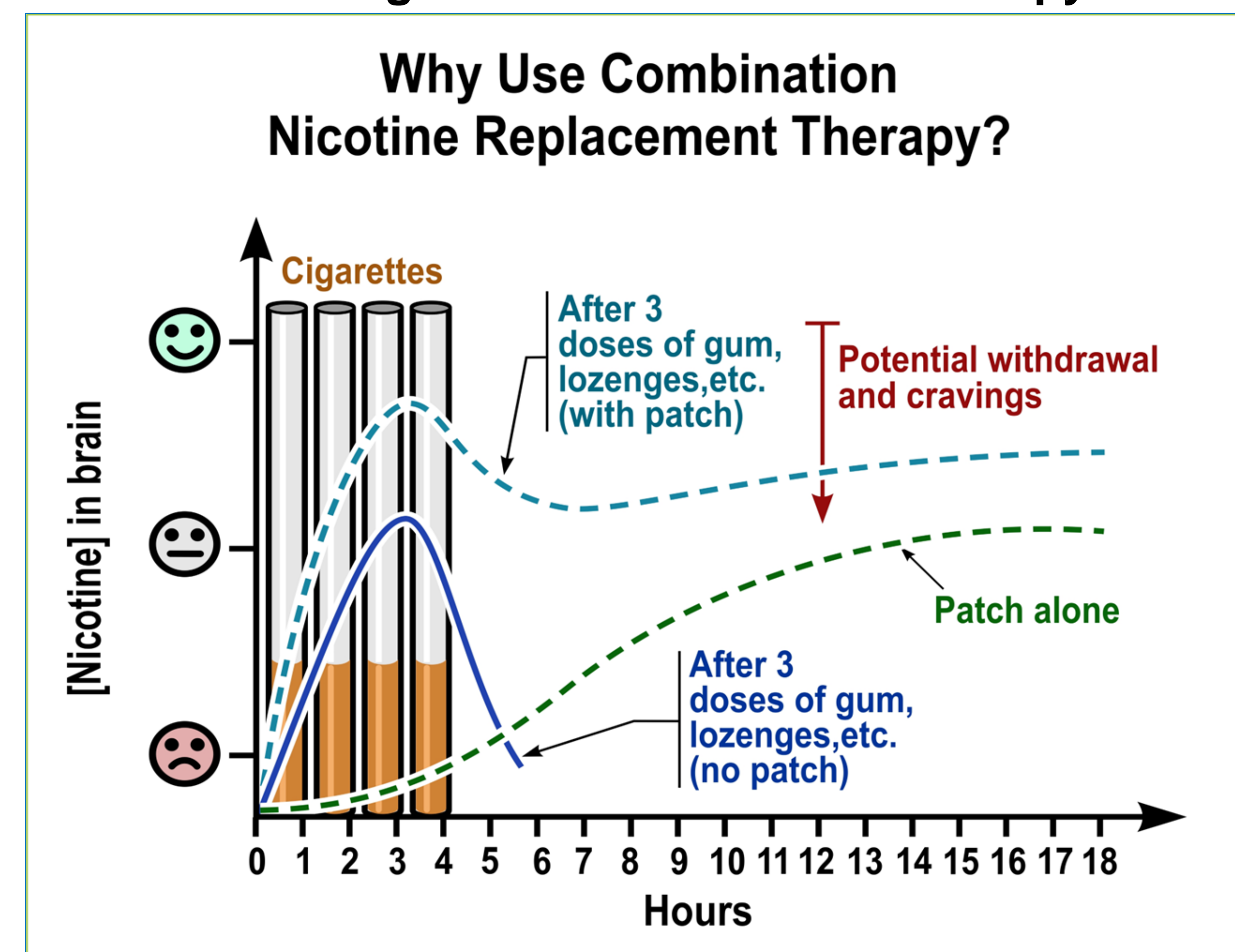|	6 months Pre-Intervention	6 months Post-Intervention	Total	P value
Age in Years at dispense date (continuous)				
Mean Age (SD)	53.5 (14.38)	53.6 (14.97)	53.6 (14.69)	0.7862
Range	19.0-87.0	18.0-90.0	18.0-90.0	
Unknown/ Unspecified	4	3	7	
Gender				
Female	773 (50%)	817 (49.4%)	1590 (49.7%)	0.8392
Male	770 (49.8%)	835 (50.5%)	1605 (50.1%)	
Unknown/ Unspecified	4 (0.3%)	3 (0.2%)	7 (0.2%)	
Race/ Ethnicity				
Asian/ Pacific Island	117 (7.6%)	112 (6.8%)	229 (7.2%)	0.0964
Black	130 (8.4%)	134 (8.1%)	264 (8.2%)	
Hispanic	316 (20.4%)	370 (22.4%)	686 (21.4%)	
White	913 (59%)	929 (56.1%)	1842 (57.5%)	
Other	39 (2.5%)	61 (3.7%)	100 (3.1%)	
Unknown/ Unspecified	32 (2.1%)	49 (3%)	81 (2.5%)	

Figure 2: cNRT Prescription Rates as a Percent of Total NRT Prescriptions Pre- and Post-CME Intervention from March 2022 to March 2023. Linear regression pre-intervention demonstrated a 0.4% increase in cNRT prescriptions per month (95% CI -0.5%-1.2%, p= 0.3424). In contrast, post-intervention exhibited a 3.1% increase in cNRT prescriptions per month (95% CI 0.6%-5.7%, p= 0.0248). Despite a slight increase in cNRT prescription rates during the entire study period, the statistically significant increase in cNRT was only seen post-intervention.
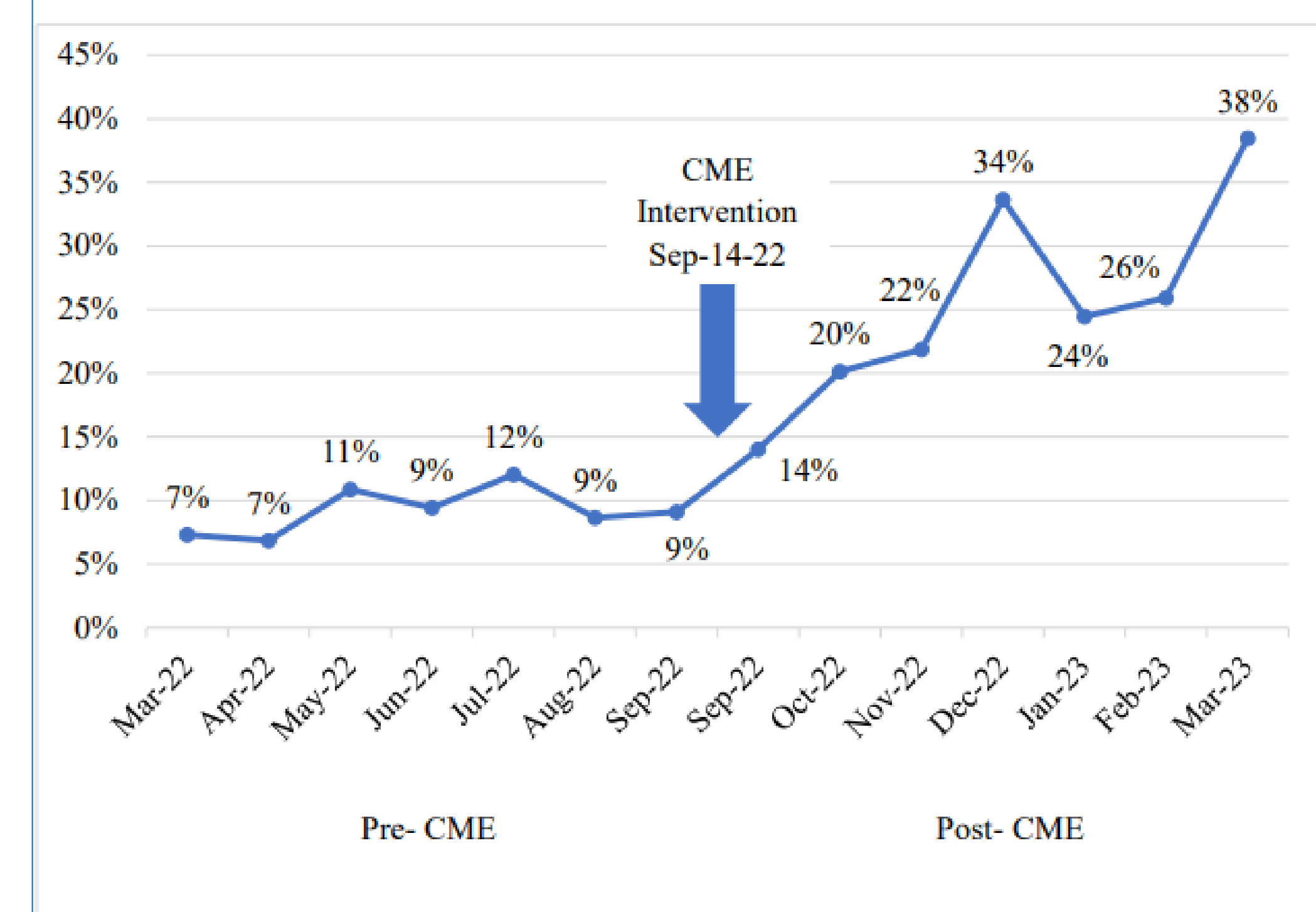

Table 2: Prescriptions of Smoking Cessation Pharmacotherapeutics by Kaiser Permanente San Diego Primary Care Physicians from March 2022 to March 2023. Data obtained from integrated pharmacy database for 6 months before and after CME intervention of September 14, 2022. McNemar's chi-squared test used for matches pairs analysis for Physicians prescribing any NRT and for Patients who were prescribed any NRT during the study period.

	6 months PRE	6 months POST	Change	p value
#Nicotine prescriptions (all forms)	6431	6681	+4%	
# Physicians who prescribed NRT	237	238	0	
# Physicians who prescribed cNRT	78	124	+59%	<0.001
%Physicians who prescribed cNRT	23%	37%		
#Patients who were prescribed NRT	1547	1655	+7%	
#Patients who were prescribed cNRT	135	380	+281%	<0.001
%Patients prescribed NRT receiving any cNRT	8.72%	22.90%		
#Patients prescribed Chantix	930	993	+7%	

RESULTS

➤ The proportion of primary care patients receiving cNRT increased nearly 3-fold during months post-intervention from 8.73% (135/1547) to 22.96% (380/1655). [**Table 2**]

➤ Linear regression of cNRT prescriptions pre/post-intervention showed increase of 2.2% per month with 95% confidence interval (1.5%, 2.9%) and p-value < 0.0001. **[Figure 2]**

➤ Total varenicline prescribed [Balancing Measure] was not negatively impacted by cNRT training [**Table 2**] suggesting no measurable bias towards NRT pharmacotherapy.

➤ While the 3-fold increase in cNRT prescribing rates was statistically significant and clinically important, a high predominance of NRT monotherapy still remained.

LIMITATIONS

➤ Over-the-counter purchased cNRT not accounted for but, given workflows at KPSD, the effect size likely small. Even if not small, changes seen in NRT/cNRT prescriptions suggest this would underestimate primary endpoint.

➤ cNRT prescription rates may not correlate with change in smoking behavior. This study was not designed to measure abstinence rates and did not compare patient-level characteristics such as severity of nicotine dependence or related comorbidities.

CONCLUSION

➤ **cNRT is an underutilized form of smoking cessation therapy and this may reflect a gap in prescriber knowledge.**

➤ **Brief physician trainings delivered virtually and strategically may be sufficient to promote evidence-based NRT prescribing and skew prescribing patterns in favor of cNRT.**

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DISLCOSURES

The study authors have no relevant financial disclosures.